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Organisation Name Technion-Israel Inst. of Technology
Organisation Type Consultancy Research Education Industry Non Commercial Technology Transfer Other
Organisation Size < 10 10-49 50-249 250-500 > 500 employees
Organisation Sector Agriculture Bio-technology Food Life Sciences Medicine, Health
Description of Organisation The Technion is a university specializing in science, technology and medicine

PROJECT Main objectives and results of research:

Title of project DEVELOPMENT OF SUBUNIT VACCINE FOR AVIAN INFLUENZA
Keywords MHC peptides, vaccine, antibodies, proteomics
Thematic Priority in FP6 SSP-5B INFLUENZA- STREP
Project description
Including -if possible - innovative aspects and expected results
An important approach for reducing the mortality rate and the negative economical impact of avian influenza is by developing effective vaccines to treat human, farm animals and birds. A live or attenuated virus vaccine is likely to be the most effective. However, its production and administration to the human population at risk and to other animals (including wild animals) is likely to be a slow and difficult process. An alternative is to develop a subunit vaccine, based on viral peptides or proteins which can be rapidly produced as synthetic molecules or recombinant proteins which would pose a reduced risk to the vaccinated people or animals. Since the disease originate in bird and possibly passes through pig hosts as well, better understanding of the interactions between the avian flu and the immune systems of these animals may open the way for the design of more efficacious vaccines.

This project proposes to develop a subunit vaccine based on immunogenic MHC peptide antigens (T cell epitopes) and on viral proteins which are the targets of antibodies in people or animals. The project's main objectives are:

1. Identification of the MHC peptide repertoires of the birds and establish their consensus binding motifs
2. Identification of MHC peptides derived from the virus proteins and presented by bird MHC molecules that elicit T cell responses
3. Identification of the viral proteins that are the targets of serum antibodies of people or animal that survive the disease
4. Based on the identification of these MHC peptides and proteins, to develop subunit vaccines that can be administered to humans, farm animals or birds.

A potential benefit of this project is the development of vaccines that can be mass-produced and administered even to wild animals. Improved understanding of the immunology of the avian influenza may help future design of molecules that could be used as components of vaccines for



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other strains of influenza and other viruses transmitted from birds to humans.

The innovative aspect of this research is that the use of large repertoires of MHC peptides repertoire of birds, pigs and other farm animals will be established and expanded. This will enable the design of vaccines for different transmittable diseases. The approach will be based on combining immunology with proteomics and with virology to perform large-scale analyses of the MHC peptidome (the complete repertoire of MHC peptides presented by each of the alleles) and serological proteomics (the complete repertoire of proteins against which antibodies are presents in the studied organism). The identified MHC peptides and proteins will be tested for their efficacy to elicit immune responses and thus to serve as vaccine candidates.

Partnership (*SMEs and RTD performers already involved*)

Profile of Partner sought e.g. SMEs / University / hospitals etc. **All of these**

Required Expertise Immunologist and virologist, especially specialist in avian immunology and virology

PLEASE FILL IN THE EXPRESSION OF INTEREST-FORM AND RETURN IT TO:

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